

REMARKS

Claims 1, 2, 4-6, 8-10 and 12-14 are pending in the present application. The Office Action presents the following points in connection with the pending claims: 1) claim 1 is objected to for a spelling informality; 2) claims 1, 2, 4, 5, 8, 9, 10 and 12 are rejected under 35 U.S.C. §103(a) as being unpatentable over van Dreumel (US 5,536,344) in view of DE20105550 and Spengler (US 6,287,678); and claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Dreumel in view of DE20105550 and Spengler as applied to claim 5, and further in view of Gorski (US 4,265,688); and 3) claims 6 and 14 are objected to as being dependent upon a rejected base claim, but are stated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1, 6, 8 and 14 are currently amended. Reconsideration and withdrawal of the objections and rejections is respectfully requested in view of the amendments presented herein and the following remarks.

1. Claim Objection – Claim 1

Claim 1 is amended to appropriately correct the spelling informality, thereby traversing this objection.

2. Claim Rejections – 35 USC § 103(a)

Claims 1, 2, 4, 5, 8, 9, 10, 12 and 13 stand rejected under Section 103(a). Applicant respectfully submits none of the cited references, taken alone or together renders these claims obvious and therefore respectfully requests that these rejections be withdrawn.

Regarding claim 1, the Office Action incorrectly alleges that DE20105550 (DE ‘550) in combination with van Dreumel teaches a method wherein ultrasonic welding is employed to fuse the insert and the panel. In particular, the Office Action states:

Van Dreumel does not teach a method wherein ultrasonic welding is employed to fuse the insert and the panel. DE20105550 (hereinafter ‘550) discloses a method wherein a flanged plastic 12a insert is ultrasonically welded to a plastic panel 6 by placing the insert between a horn (sonotrode 2) and an anvil (rest 4) and applying ultrasonic energy and pressure (abstract). Ultrasonic welding relies upon ultrasonic vibrations to create heat between the two plastic parts due to the friction of vibration. This heat in turn welds the two plastic parts together. This relies upon a similar concept as van Dreumel which also generates heat by the friction caused by the rotation of the insert against the panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the ultrasonic welding of ‘550 in the method taught by van Dreumel because one of ordinary skill in the art would have been able to carry out such a substitution to achieve the predictable result of welding the insert to the panel”

(paragraph 7, Office Action) (emphasis added).

Applicant respectfully disagrees. Specifically, DE ‘550 discloses an ultrasonic welding apparatus for welding a plastic part to a package material layer and a plastic layer, and for simultaneously welding a thermoplastic part to a cardboard layer and a plastic foil. First of all, this thermoplastic part is only a pouring part, such as used in packing of juices and milk products. It is not a “thermoplastic insert unit” as recited in claim 1. Additionally, the package material layer in DE ‘550 is not a “fiber-reinforced covering layer of the thermoplastic sandwich product” as recited in claim 1. In particular, DE ‘550 teaches that its pouring part has a flange welded to the upper side of the cardboard layer and a bottom side welded to the plastic foil. Such an arrangement in DE ‘550 offers sufficient freedom to apply pressure, ultrasonic energy and welding times that are contrary to applying an insert in a thermoplastic panel, as recited in claim 1. DE ‘550 thus teaches away from using ultrasonic welding to fuse the thermoplastic insert to the sandwich panel as recited in claim 1.

This is evident from DE '550 itself. DE '550 discloses a design for welding face 12 of the apparatus, which is divided into two separate areas, 12a and 12b. Similarly, the rest 4 has two separate areas, 4a and 4b, where each is capable of moving with respect to the other. In this way, the structure of DE '550 allows for pressures applied and welding times that can be set individually for those different areas (see page 5, line 30 – page 6, line 7 of original DE '550). In contrast, welding a thermoplastic insert in a sandwich panel having a thermoplastic foam core – as recited in claim 1 – requires low welding pressures and short welding times in order to keep the foam core structure of claim 1 from collapsing. As such, combining van Dreumel and DE '550 teaches away from claim 1 because the welding apparatus from DE '550 substituted for the rotational friction welding from van Dreumel would be detrimental to the object of the method recited in claim 1.

Furthermore, a person with ordinary skill in the art would not use the ultrasonic welding taught by DE '550 instead of rotational friction welding taught by van Dreumel. Ultrasonic welding is an energy rich method that produces high energy vibrations. These high energy vibrations risk collapsing a foam structure such as recited in claim 1.

Consequently, the conclusion drawn by the Examiner that DE '550 relies on the same concept as van Dreumel is not valid. Therefore, the Examiner's argument that it would have been obvious to replace the rotational friction welding of van Dreumel by ultrasonic welding according to DE '550 is incorrect. As shown above, the result of such a substitution as proposed in the Office Action is not predictable, certainly not in the context of claim 1. If anything can be predicted from such a substitution, it is that the substitution would fail to meet the objective of claim 1. The results in the case of a sandwich panel as defined in pending claim 1 would not be comparable.

Next, the Office Action alleges that Spengler can be used in combination with van Dreumel and DE '550 to teach a panel having a thermoplastic foam core. In particular, the Office Action states:

Van Dreumel discloses the sandwich panel as comprising resin sheets bonded to a core, for example, thin metal ribbing (col 3, lines 4). Van Dreumel does not limit the core material to metal honeycombs and sandwich panels comprising a core of thermoplastic foam are well known in the art as evidenced by Spengler which discloses a composite structure panel having a thermoplastic foam core between two fiber-reinforced skins (abstract) Spengler teaches the foam core coupled with the skin provides high strength, rigidity and high strength to weight ratio. It would have been obvious to a person having ordinary skill in the art at the time of the invention to employ a foam core, since it has been held to be within the ordinary skill of a worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to use a foam core for its high strength to weight ratio.

(paragraph 8, Office Action) (emphasis added).

Again, Applicant respectfully disagrees. In particular, Applicant asserts that the rotational friction welding procedure taught by van Dreumel is limited to metal ribbing such as honeycombs because rotational friction welding as taught by van Dreumel would immediately destroy a foam structure if present. Moreover, the friction between the surface of the insert and the foam required to melt the foam locally would similarly melt the insert, which risks deforming the insert such that it is rendered useless. This is further evidenced by the fact that van Dreumel teaches to bore a hole having an oversized diameter compared to the cylindrical base portion of the insert at column 3, lines 34-36. This is in contrast to Applicant's claim 4 which recites that "the dimensions of the hole are equal to the dimensions of the thermoplastic insert unit." Therefore, van Dreumel teaches away from using a foam core structure, such as in Spengler, because the rotational friction employed in van Dreumel would destroy a foam core.

Even assuming that at the time of the present invention a three-layered substrate including a thermoplastic foam core sandwiched between two composite outer layers was known, such

would not render Applicant's claim 1 obvious. The method of claim 1 is not directed to a sandwich panel as such, neither to an ultrasonic welding method as such, but to a method of ultrasonic welding of a thermoplastic insert having a flange to a sandwich panel having a specific configuration and composition, which as shown above is not taught by the asserted combination of the three (3) references.

As such, combining van Dreumel with DE '550 and Spengler teaches away from a method of ultrasonic welding of a thermoplastic insert having a flange in a sandwich panel having a specific configuration and composition as recited in claim 1. Therefore, Applicants respectfully request that the rejection to claim 1 be withdrawn for the same reasons as above for claim 1.

Insofar as claims 2, 4, 5, 8-10, 12 and 13 depend from allowable independent claim 1, Applicant respectfully requests that the rejections to claims 2, 4, 5, 8-10, 12 and 13 be withdrawn for the same reasons as above for claim 1.

With respect to claim 8, Applicant further submits that van Dreumel fails to disclose the step of "forming a recess by deformation in a surface of the thermoplastic sandwich product before a thermoplastic insert is placed in the hole formed in the covering layer, the recess configured to receive the flange of the thermoplastic insert unit" as amended herein. In rejecting this claim, the Office Action states "van Dreumel teaches that a hole (recess) is cut into the panel before the insert is placed (col 1, lines 55-57)." In particular, the Office Action asserts that the "hole" and a "recess" are interchangeable. Applicant respectfully disagrees. A "hole" and a "recess" are not the same thing and are not equivalent. A recess can be formed without making a hole. And a hole can be formed without forming a recess. As disclosed in the specification, a hole is made to receive the body of the insert, while a recess is made by deformation in a surface of the thermoplastic sandwich product for receiving the flange of the insert in order to weld the

top side of the insert with the top covering layer of the sandwich panel, preferably flush with the top covering layer. Thus the recess and the hole have completely different purposes. Moreover, van Dreumel teaches that this flushing arrangement is established during rotational welding itself and not through a deformation step before a thermoplastic insert is placed in the hole formed in the covering layer, as recited in claim 8. (van Dreumel, col 3, lines 62-65). As such, the rejection to claim 8 should be withdrawn for at least this additional reason.

3. Claims 6 and 14

Claims 6 and 14 are stated to be allowable if placed in independent form including all of the features of their base independent claim and any intervening claims. Claims 6 and 14 are amended herein to place them in independent form, as suggested.

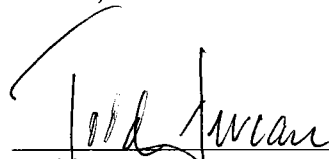
CONCLUSION

In light of the foregoing remarks set forth above, Applicant respectfully submits that the present application is in condition for allowance and as such, favorable allowance of the present application is hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully Submitted,

**THOMAS, KAYDEN, HORSTEMEYER
& RISLEY, L.L.P.**

By:



Todd Deveau, Reg. No. 29,526

600 Galleria Parkway, Suite 1500
Atlanta, Georgia 30339
(770) 933-9500